

DRAWINGS ATTACHED.

1,077,072

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COMPLETE SPECIFICATION.

Method and Apparatus for Forming Edible Products and the Product thereof.

We, NATIONAL DAIRY PRODUCTS CORPORATION, a corporation organized under the laws of the State of Delaware, United States of America, of 260 Madison Avenue, City of New York, County of New York, State of New York, United States of America, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates generally to the manufacture of edible products and, more particularly, it relates to ice cream and other products having patterns of contrasting colors.

Various means are known and have been used for a number of years in the manufacture of patterned ice cream products, for example, the well known three flavored bricks of ice cream wherein the layers are usually each of a different color and flavor and the layers extend longitudinally of the bricks of ice cream. From time to time during various special seasons of the year, special colored designs have been incorporated into bricks of ice cream, such as a Santa Claus head, a Shamrock, or George Washington's Hatched. In these bricks or blocks of ice cream, the different colored portions of the patterns extend longitudinally throughout the entire block of ice cream. Other multi-flavored and multi-colored ice creams, such as ripple ice cream, are well known in the ice cream field. These ripple ice creams include flavoring or other materials which streak throughout the ice cream.

However, available methods and apparatus have not provided means for furnishing a patterned ice cream, which, when cut in any of three planes perpendicular to each other

provides a multiple ice cream pattern in each plane.

It is a primary object of this invention to provide improved means for manufacturing a patterned ice cream or other product and the product of such means. Another object of this invention is the provision of a new and novel method and apparatus for manufacturing a patterned ice cream or other product wherein a pattern is provided in three dimensions of the product.

A still further object of the invention is the provision of new and useful method and apparatus for making an ice cream block having abutting columns of contrasting colors and wherein the columns have transversely overlapping parts of contrasting colors, thereby providing a checkerboard pattern in an ice cream block in any of three planes which are perpendicular to each other. A further object of this invention is the provision of cylindrically shaped ice cream product having abutting columns of contrasting colors and having circumferentially arranged adjacent portions of contrasting colors, thereby providing a unique ice cream product.

The present invention consists in an edible product comprising a stack of layers, each layer comprising a plurality of different materials arranged in respective portions in successive rows, with adjacent portions in each row, adjacent portions of adjacent rows in each layer, and adjacent portions in adjacent layers being formed of different materials.

In a preferred embodiment of the invention, said stack of layers is rectangular and said portions are also of rectangular shape: for instance, it may be a rectangular block having flat top, bottom, side and end walls,

[Price 4s. 6d.]

and said portions of said different materials provide a checkerboard pattern in each of a first plane parallel to said end walls, a second plane parallel to said side walls, and a third plane parallel to said top and bottom walls. Alternatively, said stack may be of cylindrical shape, with said rows of portions in each of said layers arranged in concentric rings.

The invention also consists in an apparatus for forming an edible product of different materials, comprising at least two manifolds each adapted to contain a different one of said materials, said manifolds having discharge nozzles with openings arranged in a pattern with adjacent openings communicating with different manifolds, a grid having openings arranged in a pattern similar to said pattern of said manifold openings, and product receiving means communicating with said grid openings for the advance of said materials to the product receiving means through said nozzle openings and the grid openings, said manifolds and said grid being supported for movement relative to each other and transversely of the direction of advance of said materials to form layers of portions of said materials in patterns corresponding to the patterns of said openings, with adjacent portions in each layer and adjacent portions of adjacent layers being formed of different materials.

Preferably, in the apparatus of the invention, the manifolds and nozzle openings are stationarily supported, and the grid is moveably supported for movement relative to the nozzle openings. In one embodiment, the grid includes at least three generally rectangular block shaped openings; alternatively, the grid may be cylindrical with the grid openings arranged in concentric rings, the grid being rotatable about the axis of the rings.

The invention further consists in a method of forming an edible product comprising a plurality of different materials, said method comprising forming quantities of each material into component portions and assembling said portions to form a stack of layers, each layer comprising a plurality of different materials arranged in respective portions in successive rows, with adjacent portions in each row, adjacent portions of adjacent rows in each layer, and adjacent portions in adjacent layers being formed of different materials.

For example, the component portions of different materials may be assembled by first forming layers with adjacent portions in each layer composed of different materials, and then bringing the layers into contact with each other. In one preferred embodiment, quantities of each of the materials are formed into similarly sized and shaped small rectangular blocks, and the blocks are assembled together to form a larger rectangular block.

The invention is further described with reference to and illustrated by the accompanying drawings, in which:

Figure 1 shows a rectangular ice cream block made in accordance with the present invention;

Figure 2 is a schematic diagram of apparatus for forming the block shown in Figure 1;

Figure 3 is a perspective view, partially broken away, of a portion of the apparatus illustrated in Figure 2, the apparatus including a shuttle grid which is disposed in one position;

Figure 4 is a view similar to Figure 3 with the shuttle grid shown in a second position;

Figure 5 is a perspective view of a cylindrically shaped ice cream unit; and

Figure 6 is a perspective view, partially broken away, of a portion of apparatus for making the ice cream shape shown in Figure 5.

Apparatus of the invention is generally designated by numeral 7 and is supplied by two sources of ice cream, freezers being shown schematically in the drawings as the sources and being designated by the numerals 9 and 11. These ice creams are supplied from the freezers 9 and 11 in the form of different colored and/or different flavored ice cream. Thus, the freezer 9 may supply a chocolate ice cream and the freezer 11 may supply vanilla ice cream through suitable supply lines 13 and 15 respectively, to the apparatus 7 of this invention.

The apparatus 7 discharges the product into a carton 17 which may either be square or round in cross section, depending upon whether the rectangular block shown in Figure 1 is being manufactured or the cylindrical block shown in Figure 5 is being provided.

The apparatus 7 includes a header 19 which is connected to a guide tube 21. The guide tube feeds the ice cream into the carton 17 and has the same cross section as the carton.

The header 19 comprises two manifolds 23 and 25 in superposed relation. The upper manifold 23 connects to the supply line 13 and the lower manifold 25 connects to the supply line 15 so that each of the manifolds may be filled with different ice cream. As shown in Figure 3, the upper manifold 23 communicates with a plurality of nozzles 27 which have inlet openings 29 and discharge sections 31 having outlets of generally square cross section. The nozzles are shown arranged in the manifold in a generally checkerboard pattern and intermediate portions are provided with plates 33 which separates the upper manifold 23 from the lower manifold 25.

Since only one supply line 15 is provided to feed the lower manifold 25, the sides of the discharge sections 31 of the nozzles 27

are formed to provide passageways in the lower manifold 25 and thereby permit ice cream to be distributed throughout the lower manifold 25.

5 The lower manifold 25 also includes a plurality of nozzles 27a having openings 29a for receiving ice cream. The nozzles 27a also include discharge sections 31a having outlets with generally square cross section. 10 The nozzles 27a are located beneath the plates 33 and, therefore, are arranged in an alternate checkerboard pattern to that of the nozzles 27 in the upper manifold 23.

15 The nozzles 27 and 27a each communicate with a grid section of the header 19, the grid section being generally designated by numeral 35. This section 35 comprises a housing 37 located beneath the manifolds 23 and 25. The housing extends outwardly from opposite ends of the header 19. Within the housing 37 there is disposed a shuttle grid 39 having openings 41 of the same cross section as the nozzles 27 and 27a, i.e., generally square. The shuttle grid 39 has a height which is proportional to the height of the different colored sections of the product shown in Figures 1 and 5. Thus, the grid is proportioned to form a section of ice cream having the desired dimensions of the different colored sections shown in Figures 1 and 5. 25 The shuttle grid 39 moves transversely in the header 19. The openings 41 in the shuttle grid 39 each fill with a portion of ice cream and discharge the formed portion into the guide tube 21. 30

35 The means for moving the shuttle grid 39 are not shown in the drawings but will comprise a mechanical arrangement for rapidly moving the shuttle grid 39 in the housing 35 between two positions. In one position, as shown in Figure 3, the outermost row of the shuttle grid will be blocked off by the outwardly extending portion of the grid section 35 at one transverse extreme of its movement. In its other position, as shown in Figure 4, the other outermost row of openings 41 will be blocked off by the other outwardly extending portion of the grid section 35. 40

45 It will be appreciated that additional manifolds may be superposed on the manifolds 23 and 25 shown in the drawings and such additional manifolds may be filled with ice cream of other color and/or flavor. Such additional manifolds would, of course, feed into nozzles which discharge into the shuttle grid openings 41. As a result, a block of ice cream may be provided with three or more flavors and/or colors. 50

55 In the operation of the apparatus 7, ice cream is delivered from the freezers 9 and 11 into the supply lines 13 and 15 to the manifolds 23 and 25. The nozzles 27 and 27a are filled through their openings 29 and 29a. 60 The nozzles fill the openings 41 in the shuttle

grid 39, except for the openings on one row at one of the extreme positions. When the openings 41 are filled and the product has further travelled the thickness of the grid, the shuttle grid 39 moves to its other extreme position, thereby causing the shuttle grid openings 41 to underlie alternate nozzles which communicate with the other manifold. Continued pressure of ice cream causes the filled openings in the grid to be emptied into the guide tube 21 and the openings 41 to fill with an alternate flavored and/or colored ice cream. When the openings 41 are filled with the alternate colored ice cream and the product has further travelled the thickness of the grid, the shuttle grid 39 is moved back to its first position and filled with the first-mentioned ice cream. Thus, cubes of ice cream are formed in the openings 41 and the cubes are alternately formed of different colored or flavored ice cream. The grid is delayed under each nozzle 27 and 27a for a time sufficient to fill the openings 41 and for an additional time sufficient to permit the product to further travel the thickness of the grid, whereupon the shuttle grid is quickly moved under an alternate nozzle to fill with a second colored or flavored ice cream. In this manner, the checkerboard block is formed as shown in Figure 1 with the checkerboard pattern being present when the block is cut in any of three planes perpendicular to one another. 70 75 80 85 90 95

100 It will be apparent that the timing of movement of the shuttle grid 39 throughout and the thickness of the grid 39 may be adjusted to provide a desired pattern.

105 As an alternate embodiment of the invention, the product may be formed in the shape shown in Figure 5 and the apparatus for forming this shape is generally designated by the numeral 7¹ in Figure 6. Since various parts of this alternate embodiment are similar, corresponding parts are similarly numbered and differentiated by the symbol prime (¹). As shown in Figure 6, the apparatus 7¹ is generally cylindrical in shape and comprises a header 19¹ including an upper manifold section 23¹ and a lower manifold section 25¹. These manifold sections are filled by means of supply lines 13¹ and 15¹, respectively. Each manifold communicates with nozzles 27¹ and 27a¹. These nozzles are shaped, in cross section, with radially extending sides and with arcuate edges extending between the sides. The nozzles communicate with a circular shuttle grid 39¹ which has openings (not shown) corresponding to the nozzle discharge openings. The grid 39¹ is rotated between the nozzle 27¹ and 27a¹ to fill with alternate color and/or flavored ice cream to provide the product shown in Figure 5. The apparatus 7¹ operates in a similar manner to the apparatus 7, through filling of the openings in the shuttle 110 115 120 125 130

grid and discharging them into the guide tube 21¹ located below the header 19¹.

Because of the rotating movement of the grid 39¹ it is not necessary to provide a section corresponding to the grid section 35 which would block off any openings in the grid 39¹.

While this description primarily refers to ice cream, it will be understood that similar products such as sherbets and ices may be used. In addition, other products than ice cream may be employed which other products are flowable but viscous enough to retain their shape, as for example dough and puddings.

It will be seen from the foregoing that the applicant has provided a unique apparatus and method to give new products not heretofore known in the trade. The checkerboard pattern, produced by the apparatus shown in Figure 1, is provided in three dimensions which is believed to be wholly new. Similarly, the cylindrically shaped block shown in Figure 5 is believed to be new.

WHAT WE CLAIM IS:—

1. An edible product comprising a stack of layers, each layer comprising a plurality of different materials arranged in respective portions in successive rows, with adjacent portions in each row, adjacent portions of adjacent rows in each layer, and adjacent portions in adjacent layers being formed of different materials.

2. A product as claimed in claim 1, wherein said stack is rectangular and said portions are of rectangular shape.

3. A product as claimed in claim 1, wherein said stack is a rectangular block having a flat top, bottom, side and end walls, and said portions of said different materials provide a checkerboard pattern in each of a first plane parallel to said end walls, a second plane parallel to said side walls, and a third plane parallel to said top and bottom walls.

4. A product as claimed in claim 1, wherein said stack is of cylindrical shape and said rows of portions in each of said layers are arranged in concentric rings.

5. An apparatus for forming an edible product of different materials, comprising at least two manifolds each adapted to contain a different one of said materials, said manifolds having discharge nozzles with openings arranged in a pattern with adjacent openings communicating with different manifolds, a grid having openings arranged in a pattern

similar to said pattern of said manifold openings, and product receiving means communicating with said grid openings for the advance of said materials to the product receiving means through said nozzle openings and the grid openings, said manifolds and said grid being supported for movement relative to each other and transversely of the direction of advance of said materials to form layers of portions of said materials in patterns corresponding to the patterns of said openings, with adjacent portions in each layer and adjacent portions of adjacent layers being formed of different materials.

6. An apparatus as claimed in claim 5, wherein said manifolds and nozzle openings are stationarily supported, and said grid is movably supported for movement relative to said nozzle openings.

7. An apparatus as claimed in claim 5 or claim 6, wherein said grid includes at least 3 generally rectangular block shaped openings for forming rectangular portions.

8. An apparatus as claimed in claim 5 or claim 6, wherein said grid is cylindrical with said grid openings arranged in concentric rings, and is rotatable about the axis of the rings.

9. A method of forming an edible product comprising a plurality of different materials, said method comprising forming quantities of each material into component portions and assembling said portions to form a stack of layers, each layer comprising a plurality of different materials arranged in respective portions in successive rows, with adjacent portions in each row, adjacent portions of adjacent rows in each layer, and adjacent portions in adjacent layers being formed of different materials.

10. A method as claimed in claim 9, wherein said portions are assembled by first forming layers of portions with adjacent portions in each layer composed of different materials and then bringing said layers into contact with each other.

11. A method as claimed in claim 9, wherein quantities of said materials are formed into similarly sized and shaped small rectangular blocks, and such blocks are assembled together to form a larger rectangular block.

MARKS & CLERK,
Chartered Patent Agents,
Agents for the Applicants.

Fig 1

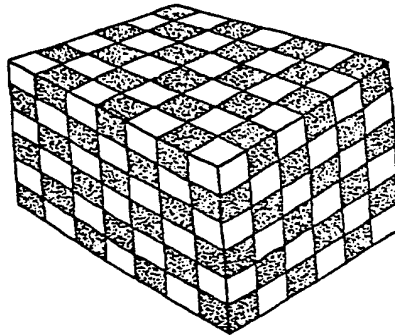


Fig 2

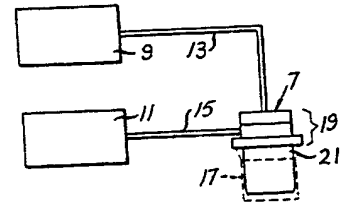


Fig 3

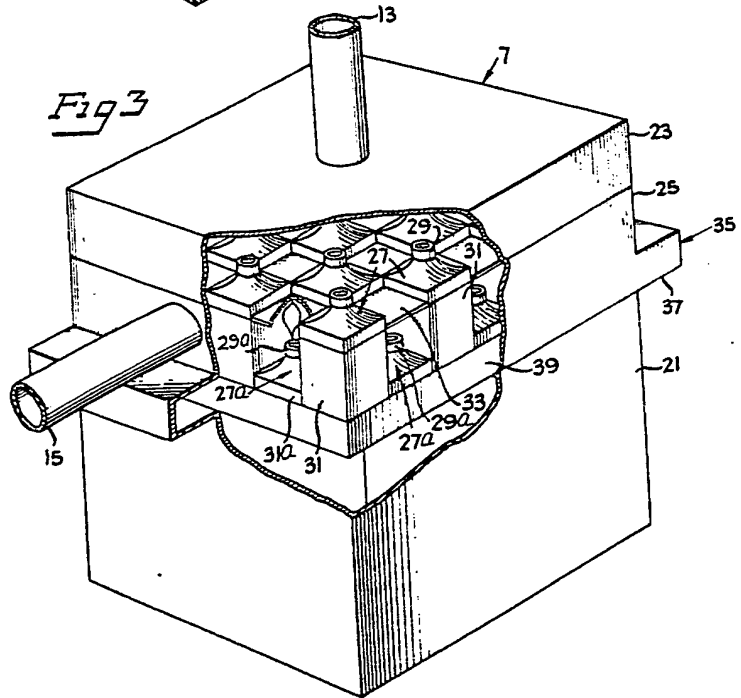


Fig 2

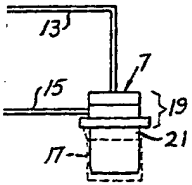


Fig 4

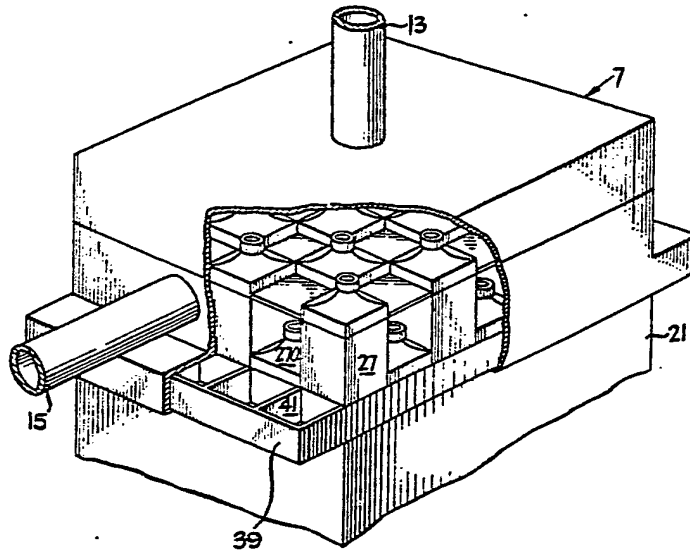


Fig 5

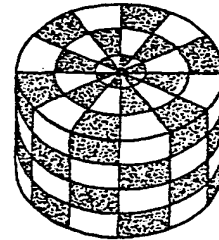
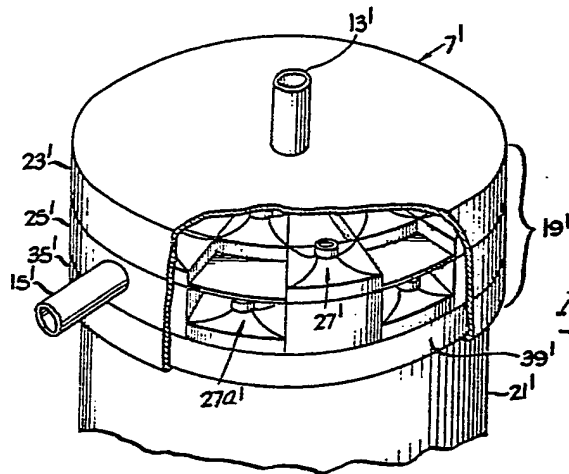


Fig 6



3

15

35

17

21

23'

25'

35'

15'

19'

27'

39'

21'

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 2 SHEETS This drawing is a reproduction of
 the Original on a reduced scale
 Sheets 1 & 2

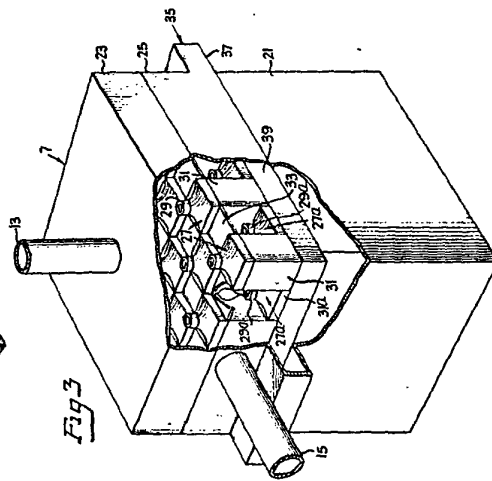
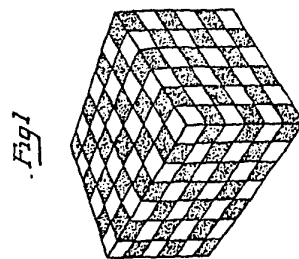
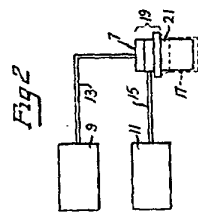
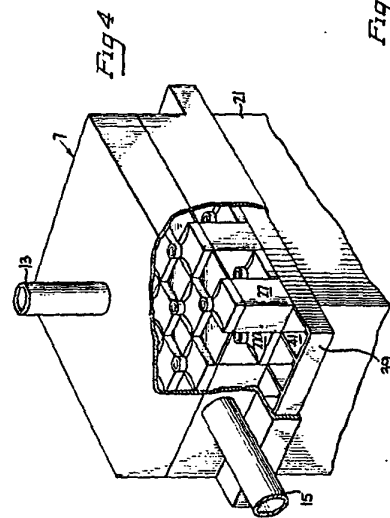
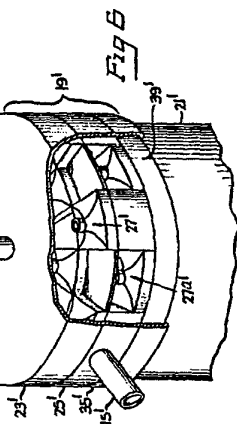
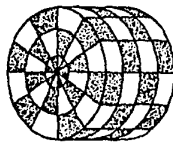


Fig 5





1
2